CLAIMS

1. A cordless blind comprising:

a headrail;

a bottom rail suspended from the headrail by a first cord and a second cord;

a window covering disposed between the headrail and the bottom rail;

a drive actuator including:

a spring motor,

a spool coupled to the spring motor,

a first tensioning mechanism, and

a second tensioning mechanism;

wherein the first and second tensioning mechanisms are configured to provide a resistant force on movement of the first and second cords, respectively.

2. The cordless blind of Claim 1, wherein the drive actuator is mounted in the headrail.

3. The cordless blind of Claim 1, wherein the spring motor includes a storage drum, an output drum, and a spring member coupled to the storage drum and the output drum, wherein the spool, the storage drum, the output drum, and the first and second tensioning mechanisms each have an axis disposed in a generally horizontal direction.

4. The cordless blind of Claim 1, wherein the spool shares an axis with one of the storage drum and the output drum.

5. The cordless blind of Claim 4, wherein the spool includes a first and second slot configured to receive the first and second cords, respectively.

6. The cordless blind of Claim 1, wherein the first and second tensioning mechanisms are first and second winding members.

7. The cordless blind of Claim 6, wherein the first and second winding members each include a compliant outer surface.

8. The cordless blind of Claim 7, wherein the compliant outer surface is an elastomeric material.

9. The cordless blind of Claim 7, wherein the first and second cords are wound around the first and second winding members at least once.

10. The cordless blind of Claim 1, wherein the first and second tensioning mechanisms each include a tensioning pulley.

11. The cordless blind of Claim 1, wherein the first and second tensioning mechanisms each include a wheel.

12. A cordless blind comprising:

a headrail;

a bottom rail suspended from the headrail by a first cord and a second cord;

a window covering disposed between the headrail and the bottom rail;

a drive actuator including:

a spool

a spring motor coupled to the spool,

a biasing element coupled to the spring motor and configured to provide a force biased against movement of the bottom rail,

a bias mechanism coupled to the biasing element, the bias adjustment mechanism being configured to provide a selective variable application of a biasing force by the biasing element.

13. The cordless blind of Claim 12, wherein the biasing element is a spring.

14. The cordless blind of Claim 13, wherein the biasing element is a belleville spring.

15. The cordless blind of Claim 13, wherein the bias adjustment mechanism is a knob threaded onto an axle and configured to provide variable biasing force upon rotation.

16. The cordless blind of Claim 15, further including a spacer disposed between the knob and the biasing element, wherein rotation of the knob forces the spacer against the spring.

17. The cordless blind of Claim 12, wherein the bias adjustment mechanism is accessible from an area external to one of the headrail and the bottom rail.

18. The cordless blind of Claim 17, wherein the bias adjustment mechanism is adjusted using a tool.

19. The cordless blind of Claim 12, wherein the bias adjustment mechanism includes a release button.

20. The cordless blind of Claim 12, wherein the bias adjustment mechanism includes a squeeze release brake including a first portion and a second portion coupled to the first portion by a hinge, the first and second portion each having a flange oppositely disposed from a friction surface, the friction surface being biased against the spool by the hinge.

21. A cordless blind comprising:

a headrail;

a bottom rail suspended from the headrail;

a plurality of slats disposed between the headrail and the bottom rail;

a drive actuator including:

a pair of spring motors mounted in the headrail,

a pair of pulleys mounted in the bottom rail,

each spring motor includes a pair of lift cords, the lift cords having a first portion attached to the headrail and a second portion coupled to respective spring motors.

22. The cordless blind of Claim 21, wherein the flexible members are spring members.

23. The cordless blind of Claim 21, wherein the lift cords are translucent tape members.

24. The cordless blind of Claim 21, wherein the lift cords are transparent tape members.

25. A drive actuator for a cordless blind having a headrail, a bottom rail suspended from the headrail, and a window covering disposed between the headrail and the bottom rail, the drive actuator comprising:

a constant biasing element,

a generally rigid strap having a plurality of apertures,

a traction wheel,

a biasing member,

a mandrel coupled to the traction wheel by the biasing member,

wherein the biasing member and mandrel are configured to bias the traction wheel in a certain position.

26. The drive actuator of Claim 25, wherein the constant biasing element is a cord reel type constant torque spring.

27. The drive actuator of Claim 25, wherein the cogs at least partially circumvent the traction wheel.

28. The drive actuator of Claim 27, wherein the cogs fully circumvent traction wheel.

29. The drive actuator of Claim 25, wherein the traction wheel includes a plurality of cogs spaced apart a predetermined distance and extending from the circumference of the traction wheel, the cogs configured to engage the apertures of the strap, wherein the spacing between the cogs correspond to a plurality of apertures on strap so that movement of the of the strap rotates the traction wheel.

30. The drive actuator of Claim 25, further including a knob that projects from the second side so that the spring steel member is attached to two sides of the, wherein the mandrel is coupled to the biasing member and configured to freely hang from the traction wheel.

31. The drive actuator of Claim 25, wherein the biasing member is made of spring steel.

32. The drive actuator of Claim 25, wherein the difference between the starting torque and the constant torque of the spring determines the tension or compression of the strap.

33. A drive actuator for a blind having a headrail, a bottom rail suspended from the headrail by a first and second cord, and a window covering disposed between the headrail and the bottom rail, the drive actuator comprising:

a storage drum having a first axis;

an output drum mounted for rotation about a second axis parallel and spaced from the first axis;

a perforated biasing member coupled to the storage drum and the output drum;

a spool having a plurality of cogs extending from an outer surface of the spool and configured to engage the perforated biasing member,

wherein the spool is rotated by movement of the perforated spring member between the storage drum and output drum; wherein the spool includes a first and second slot which receive first and second cords, respectively.

34. The drive actuator of Claim 33, wherein the perforated biasing member is a constant force spring member.

35. The drive actuator of Claim 33, wherein the perforated biasing member is a constant force spring member.

36. The drive actuator of Claim 33, further including a first tensioning pulley coupled to output drum and a second tensioning pulley coupled to the storage drum.

37. The drive actuator of Claim 33, wherein the first cord is wound on the first tensioning pulley at least once, and is wound on the spool in the first slot, and the second cord is wrapped around the second tensioning pulley and is wound on the spool in the second slot.

38. A blind comprising:

a headrail;

a bottom rail suspended from the headrail;

a window covering disposed between the headrail and the bottom rail;

means for selective cordless manipulation of the bottom rail;

means for modifying the weight of the bottom rail.

39. The blind of Claim 38, wherein the means for modifying the weight of the bottom rail include a tape made from a relatively dense material attached to the bottom rail.

40. The blind of Claim 38, wherein the means for modifying the weight of the bottom rail include an end plug configured to be inserted in an end of the bottom rail.

41. The blind of Claim 40, wherein the end plug includes a capped end and a body which narrows to facilitate insertion into the bottom rail.

42. The blind of Claim 41, wherein the body of the end plug includes a one or more slots defined by a plurality of walls, the slots being configured to receive a weight module.

43. The blind of Claim 42, wherein the weight module is one of steel and lead.

44. The blind of Claim 42, wherein the slots include a compliant retaining system configured to capture weight module in a secure engagement.

45. The blind of Claim 44, wherein the compliant retaining system include walls are made from a compliant material and shaped so that the weight module is held securely by the one or more slots.

46. A drive actuator for a blind having a headrail, a bottom rail suspended from the headrail by a first and second cord, and a window covering disposed between the headrail and the bottom rail, the window covering adjustment system comprising:

an actuator;

a first actuator member coupled to the actuator and having a first arm and a second arm;

a first ladder support the plurality of slats and coupled to the first and second arm of the first ladder member; and

an actuator interface coupled to the actuator.

47. The drive actuator of Claim 46, wherein the actuator interface includes a stem.

48. The drive actuator of Claim 46, wherein the actuator interface includes a knob.

49. A cordless blind comprising:

a headrail;

a bottom rail suspended from the headrail;

a window covering disposed between the headrail and the bottom rail;

a spring motor configured to move the bottom rail relative to the top rail;

a balancing adjustment device configured to allow the consumer to adjust the operation of the spring motor.

(50-52 ELEC. SPEC.?)

50. The cordless blind of Claim 49, wherein the balancing adjustment device includes a biasing element coupled to the spring motor and configured to provide a force biased against movement of the bottom rail, and a bias relief mechanism coupled to the biasing element, the bias relief mechanism being configured to provide for selective application and relief of the biasing force by the biasing element.

51. The cordless blind of Claim 50, wherein the bias relief mechanism includes a knob threaded onto an axle and configured to provide a variable biasing force upon rotation.

52. The cordless blind of Claim 50, wherein the bias relief mechanism is accessible from an area external to one of the headrail and the bottom rail.

53. The cordless blind of Claim 49, wherein the balancing adjustment device includes a means for modifying the weight of the bottom rail.

NJ END?

54. A method of customizing a blind, the method comprising:

providing the blind to a customer at a retail outlet, the blind having an initial weight and including a head rail, a bottom rail coupled to the head rail, a window covering disposed between the head rail and the bottom rail, and a drive actuator with a spring motor operably coupled to the bottom rail;

operating the drive actuator to observe one or more performance characteristics of the blind; and

adjusting one of weight, spring force, and friction of the blind to attain a particular performance characteristic.

55. The method of customizing a blind of Claim 54, further including the step of altering the initial weight so that the blind has a revised weight.

56. The method of customizing a blind of Claim 55, wherein the revised weight is attained by reducing the width of the blind or the amount of window covering disposed between the head rail and the bottom rail.

57. The method of customizing a blind of Claim 56, wherein the step of adjusting the performance characteristics of the blind includes altering the weight in the bottom rail.

58. The method of customizing a blind of Claim 55, wherein the drive actuator includes at least one tensioning mechanism, and the step of adjusting the performance characteristics of the blind includes altering performance of the tensioning mechanism.

59. The method of customizing a blind of Claim 55, wherein the drive actuator includes a drag brake mechanism having a biasing element and a bias mechanism coupled to the biasing element, and the step of adjusting the performance characteristics of the biasing element with the bias mechanism.

60. The method of customizing a blind of Claim 54, wherein the performance characteristics includes the effort necessary to raise or lower the bottom rail.

61. The method of customizing a blind of Claim 54, wherein the performance characteristics includes the speed of which the bottom rail may be raised or lowered.

62. The method of customizing a blind of Claim 54, wherein the performance characteristics includes whether the bottom rail remains in a static position relative to the head rail when released.

63. The method of customizing a blind of Claim 54, wherein the step of adjusting the performance characteristics occurs at a retail sales location.

64. The method of customizing a blind of Claim 54, wherein the step of adjusting the performance characteristics is done by the customer away from the retail sales location.

65. A method of selling a customized blind, the method comprising:

providing a blind having a head rail, a bottom rail coupled to the head rail, a window covering disposed between the head rail and the bottom rail and a drive actuator with a spring motor operably coupled to the bottom rail;

altering the blind according to a customers preferences by altering the width of the blind or the amount of window covering;

operating the blind to determine whether the bottom rail will move relative to the top rail when released by the operator; and

adjusting one of the weight, spring force, and friction of the blind so that the bottom rail will not move relative to the top rail when released.

66. The method of selling a customized blind of Claim 65, wherein the step of adjusting includes altering the weight of the bottom rail.

67. The method of selling a customized blind of Claim 65, wherein the drive actuator includes at least one tensioning mechanism, and the step of adjusting the performance characteristics of the blind includes altering performance of the tensioning mechanism.

68. A method of in-store adjustment of a blind including a head rail, a bottom rail coupled to the head rail and having an initial weight, a window covering disposed between the head rail and the bottom rail, and a drive actuator, the method comprising:

providing the blind;

operating the blind to determine one or more of its performance characteristics; and

adjusting the performance characteristics of the blind by increasing or decreasing the weight of the bottom rail.

69. The method of in-store adjustment of a blind of Claim 68, further including the step of altering the configuration of the blind before the step of operating the blind so that the bottom rail has a revised weight.

70. The method of customizing a blind of Claim 68, wherein the performance characteristics includes the effort necessary to raise or lower the bottom rail.

71. The method of customizing a blind of Claim 68, wherein the performance characteristics includes the speed of which the bottom rail may be raised or lowered.

72. The method of customizing a blind of Claim 68, wherein the performance characteristics includes whether the bottom rail remains in a static position relative to the head rail when released.